

JAN 30 1967

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25th January 1967

Dear Professor Lederberg,

Many thanks for your interesting letter of January 17th and for the reprint, which is certainly of great interest to me.

In regard to the evidence for odd/even biases, I must point out that these refer to normal straight-chain hydrocarbons and there is no evidence that the substances obtained in the mass spectrum, and to which you refer, are straight-chain hydrocarbons.

I entirely agree with you that evidence of optical activity is very desirable before accepting quite definitely the current evidence for old biogenetic hydrocarbons. This point is one I have made frequently in lectures and in fact I mentioned it specifically in one of my publications, but I cannot remember exactly which one it was. I pointed out that pristane and phytane, for example, may come from polymerisation of dienes in the usual way and went on to say that evidence of optical activity would be decisive in favour of the biogenesis of these substances. As regards the Calvin et al hydrocarbons from the very old Soudan Shales, this point is particularly relevant and particularly difficult to get at. The optical activity would be extremely small and, of course, in the case of pristane non-existent on structural grounds. I doubt if we can obtain enough of this extremely old material to get anything decisive in regard to the optical activity. To my mind the more convincing point is that, along with the phytane/pristane group, we find also the stearane group and the co-occurrence of these two is certainly indicative of biogenesis as assumed by Calvin and his associates.

I am trying to compose a critical discussion of the evidence about meteorites and old biogenetic hydrocarbons, but must admit that a bias in favour of what I want to believe is something that has to be guarded against. It is the old phenomenon of the telling of the beads. The more often you say a thing, the more apt you are to believe it.

Finally, in regard to break-up and recombination of hydrocarbons, I have pointed out that this would be likely to lead to even predominance if anything. If an even numbered

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chain breaks up into A and B, then the combination of A with A, B with B, and A with B will still give an even numbered hydrocarbon. If an odd numbered hydrocarbon breaks up, it must be to A odd, or B even. The combinations AA and BB will now lead to an even C-number and only AB will give back the odd numbered chain. In a Discourse, of which the enclosed reprint is an account, I drew attention to this point in discussing some very interesting work of J. V. Brunnock.

With kind regards,

Yours sincerely,

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